

Wu, Jennifer

From: Emi Kondo - NOAA Affiliate <emi.kondo@noaa.gov>
Sent: Wednesday, March 22, 2017 4:22 PM
To: Wu, Jennifer
Subject: Re: Interim phosphorus limits

Sounds good. Thanks!

On Wed, Mar 22, 2017 at 4:20 PM, Wu, Jennifer <Wu.Jennifer@epa.gov> wrote:

Take your time. I'm out all day tomorrow, too, but plan to work Friday morning.

From: Emi Kondo - NOAA Affiliate [mailto:emi.kondo@noaa.gov]
Sent: Wednesday, March 22, 2017 4:19 PM
To: Wu, Jennifer <Wu.Jennifer@epa.gov>
Subject: Re: Interim phosphorus limits

Thanks! I'll try to process this tomorrow because my brain is not completely functional right now...

On Wed, Mar 22, 2017 at 3:58 PM, Wu, Jennifer <Wu.Jennifer@epa.gov> wrote:

Hi Emi, thanks again for the phone message today. Here's some additional information on phosphorus and their effects on pH in Icicle Creek. If you could let me know which way you decide to go before going out with a draft, I'd appreciate it.

- The final permit limit for all Outfalls 001 is 15 microg/L TP as an average monthly limit (1.4 kg/day TP), and 17 microg/L TP as a daily limit (1.6 kg/day TP). The final permit limit for all outfalls including Outfall 2 is 0.52 kg/day TP in total for all outfalls. This is equivalent to 5.7 microg/L TP in the TMDL. Outfalls 001 is the largest outfall with a 95th percentile flow of 25 MGD (46 cfs).

The final permit limit for all outfalls including Outfall 2 is 0.52 kg/day TP in total for all outfalls including Outfall 2. This is equivalent to 5.7 microg/L TP in the TMDL. The interim limit for Outfall 002 is 97 microg/L TP as an average monthly limit (1.7 kg/day TP), and 108 micro/g L TP (1.9 kg/day TP). These limits apply from March 1 – May 31, and July 1- October 31, which are the critical periods from the TMDL. Outfall 002 are the offline settling basins/pollution abatement ponds. They have a 95th percentile flow of 4.6 MGD (7.1 cfs).

- End-of-pipe limits: The TMDL establishes end-of pipe limits and does not account for dilution. Comparing flow rates from Outfalls 1 and 2 of 53 cfs (46 cfs + 7.1 cfs), upstream low flows from Icicle Creek upstream of the facility range from a 1Q10 of 56 cfs to a 30Q5 of 103 cfs. This shows that even under low flow conditions, some dilution would be expected to occur. Under average flow conditions, even more dilution would occur.
- Phosphorus impacts on dissolved oxygen: Unlike toxics or chemicals, phosphorus impacts to fish from low dissolved oxygen or high pH are less acute. The process for algae to uptake phosphorus and grow, and then to reduce DO during photosynthesis is a multi-step process that takes time.
- The TMDL Study for the Wenatchee River Basin DO, pH and Phosphorus (technical report that supports the TMDL at <https://fortress.wa.gov/ecy/publications/documents/0603018.pdf>) includes graphs that simulates phosphorus loads from LNFH and the pH response in the basin from 2002 synoptic survey in critical time periods. (See Figures 28-29, pps 69-70.) These graphs simulate instream phosphorus levels in Icicle Creek that might be expected and the response to pH and DO. As we discussed, Washington's standards are 6.5-8.5, but EPA's water quality criteria for pH is 6.5-9.0. These simulations applied conservative modeling assumptions such as looking at the critical low flow, showing 90th percentile critical loads, so pH levels that fish are exposed to on a longer timeframe are likely to be lower than 9.0 for an extended period.

Feel free to let me know if you have questions.

Jenny Wu

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